What Is Claimed:

1. An ion mobility mass spectrometer comprising:

a glass member having a tubular shape, with an interior conductive surface, and having an interior space defining an ion drift region;

means for injecting a sample material into the ion drift region;

means for ionizing the sample material inside the ion drift region;

an ion detector disposed at one end of said glass tube; and

means for generating an electric field within the ion drift region,

whereby an ion of the sample material is accelerated through the ion drift region toward said ion detector.

2. An ion mobility spectrometer as set forth in Claim 1 wherein the means for generating the electric field comprises

a first electrode formed on a first end of the glass tube;

a second electrode formed on a second end of the glass tube; and

a voltage source operatively connected to said first and second electrodes.

3. An ion mobility spectrometer as set forth in Claim 2 wherein the first and second electrodes each comprise a thin metal film.

4. An ion mobility spectrometer as set forth in Claim 3 wherein the thin metal film is formed of a metal selected from the group consisting of nickel-iron alloys, nickel-chromium alloys, copper, copper alloys, and gold.

5. An ion mobility spectrometer as set forth in Claim 1 wherein the glass tube is formed of a lead glass or a metal oxide glass.

6. An ion mobility spectrometer as set forth in Claim 5 wherein the metal oxide glass is a metal silicate glass.

7. An ion mobility spectrometer as set forth in Claim 1 wherein said glass tube has a second interior space that defines a reaction-ionization chamber wherein the sample material is injected and the means for ionizing the sample material is located.

8. An ion mobility spectrometer as set forth in Claim 7 comprising a shutter grid electrode disposed in said glass tube between the reaction-ionization chamber and the ion drift region.

9. An ion mobility spectrometer as set forth in Claim 8 comprising means for energizing said shutter grid electrode.

10. An ion mobility spectrometer as set forth in Claim 1 comprising:

a second glass tube having a conductive surface, said second glass tube being substantially cylindrical in shape, and having an interior space defining a reaction-ionization chamber having an inlet end and an outlet end;

means for injecting a sample material into the inlet end of the reaction-ionization chamber; and

means disposed in the reaction-ionization chamber for ionizing the sample material.

11. An ion mobility mass spectrometer comprising:

a first glass tube having a conductive surface, said first glass tube being substantially cylindrical in shape, and having an interior space defining a reaction-ionization chamber having an inlet end and an outlet end;

means for injecting a sample material into the inlet end of the reaction-ionization chamber;

means disposed in the reaction-ionization chamber for ionizing the sample material;

a second glass tube having a conductive surface, said second glass tube being substantially cylindrical in shape, having an interior space defining an ion drift region having an inlet end and an outlet end, the inlet end of the second glass tube facing the outlet end of the first glass tube;

means for controlling flow of ions from the reaction-ionization chamber into the ion drift region;

an ion detector disposed adjacent to the outlet end of the ion drift region; and

means for generating electric fields within the reaction-ionization chamber and the ion drift region, whereby an ion of the sample material is accelerated through the reaction-ionization chamber and through the ion drift region toward said ion detector.

12. An ion mobility spectrometer as set forth in Claim 11 wherein the means for generating the electric fields comprises

a first electrode formed on a first end of the first glass tube;

a second electrode formed on a second end of the first glass tube;

a voltage source operatively connected to said first and second electrodes;

a third electrode formed on a first end of the second glass tube;

a fourth electrode formed on a second end of the second glass tube; and

a second voltage source operatively connected to said third and fourth electrodes.

13. An ion mobility spectrometer as set forth in Claim 12 wherein the first, second, third, and fourth electrodes each comprises a thin metal film.

14. An ion mobility spectrometer as set forth in Claim 13 wherein the thin metal film is formed of a metal selected from the group consisting of nickel-iron alloys, nickel-chromium alloys, copper, copper alloys, and gold.

15. An ion mobility spectrometer as set forth in Claim 11 wherein the first and second glass tubes are formed of a lead glass or a metal oxide glass.

16. An ion mobility spectrometer as set forth in Claim 15 wherein the metal oxide glass is a metal silicate glass.

17. An ion mobility spectrometer as set forth in Claim 11 wherein the means for controlling the flow of ions comprises a shutter grid electrode disposed between the outlet end of the reaction-ionization chamber and the inlet end of the ion drift region.

18. An ion mobility spectrometer as set forth in Claim 17 comprising means for energizing said shutter grid electrode.

19. An ion mobility spectrometer as set forth in Claim 1 comprising a metal mesh attached to an end of the glass member and adapted for connection to a modulated electrical voltage source, whereby said mesh acts as an ion shutter grid when energized by said voltage source.

20. An ion mobility spectrometer as set forth in Claim 7 comprising a metal mesh disposed at an end of the second interior space of the glass member that defines the reaction-ionization chamber, said metal mesh being adapted for connection to a modulated electrical voltage source, whereby said mesh acts as an ion shutter grid when energized by said voltage source.